EOSDIS Core System Project

Release B GSFC Facility Plan for the ECS Project

May 1996

Hughes Information Technology Systems
Upper Marlboro, Maryland

Release B GSFC Facility Plan
for the
ECS Project

May 1996

Prepared Under Contract NAS5-60000
CDRL Item 043

APPROVED BY

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Preface

This document is a contract deliverable with an approval code 2. As such, it does not require formal Government approval, however, the Government reserves the right to request changes within 45 days of the initial submittal. Once approved, contractor changes to this document are handled in accordance with Class I and Class II change control requirements described in the EOS Configuration Management Plan, and changes to this document shall be made by document change notice (DCN) or by complete revision.

Any questions should be addressed to:

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Abstract

This document is being published as the GSFC Facilities Plan for Release B. The Facilities Plan for Release A was published in September 1995. This plan provides requirements and plans for ECS facilities and operations areas. It includes the following information:

- Key Release B implementation dates

- Facility space requirements with proposed floor diagrams for the positioning of ECS equipment

- Electrical power, cooling, security, and facility preparation requirements

The data and plans contained within this document are based on the detailed design presented in the Release B Design Specification (CDRL 305) presented at the April '96 Release B CDR. The facility layouts are based on the quantities and types of equipment that will be furnished during Release B. They show the proposed placement of ECS equipment within the GSFC DAAC, SMC, and EOC.

Keywords: floor diagrams, equipment, space, cooling, heating, grounding, environmental, security, fire protection, facilities.

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Change Information Page

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3-1 through 3-10	Submitted as Final
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5-1 through 5-10	Submitted as Final
AB-1 through AB-2	Submitted as Final

Document History			
Document Number	**Status/Issue**	**Publication Date**	**CCR Number**
302-CD-003-001	Submitted as Final	May 1996	96-0473

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302-CD-003-001

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1.   Introduction

1.1 Purpose

This plan is prepared to inform the host site of the approximate requirements for the ECS Release B systems. The Release B systems are in support of the AM-1 and Landsat missions whereas Release A systems are in support of the TRMM mission. For ease of identifying column headings in tables, the release designation is used in place of the NASA project names.

The requirements contained in this plan (e.g. space, power, cooling) are based on the quantities and types of equipment described in the Release B design specification (i.e. CDRL 305) submitted for the April '96 Release B Critical Design Review (CDR). The quantities, makes, and/or models may change somewhat by the time Release B equipment is delivered, dependent on decisions reached during and after the CDR. Sites scheduled to receive equipment at Release B include Goddard Space Flight Center (GSFC), Langley Research Center (LaRC), EROS Data Center (EDC), Alaska SAR Facility (ASF), Jet Propulsion Laboratory (JPL), National Snow and Ice Data Center (NSIDC), and Oak Ridge National Laboratory (ORNL).

1.2 Organization

This document is organized as follows:

Section 1 identifies the purpose, organization, review and approval procedures for this document.

Section 2 provides the list of related documents.

Section 3 describes the facility requirements (e.g. space, power, cooling, etc.) necessary to support the installation and operation of Release B ECS systems.

Section 4 addresses the Government's plan for the facility and any requirements/issues that require resolution prior to the planned installation.

Section 5 provides facility diagrams showing the proposed placement of ECS Release B equipment.

1.3 Review and Approval

This document is a formal contract deliverable with an approval code 2. As such it does not require formal Government review or approval; however, the Government reserves the right to request changes within 45 days of the initial submittal or any subsequent revision. Changes to this document shall be made by document change notice (DCN) or by complete revision.

This document is an update of the ECS Facilities Plan dated June 1994 (CDRL Item 43) and provides updated facilities requirements and plans based on the ECS detailed designs presented at the Release B SCDO Critical Design Review (CDR).

Questions regarding information contained within this document should be addressed to the following ECS contacts:

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302-CD-003-001

2.   Related Documentation

2.1 Parent Documents

The following documents are the parents from which the scope and content of this document derive:

423-41-01   Goddard Space Flight Center, EOSDIS Core System (ECS) Statement of Work

423-41-02   Goddard Space Flight Center, Functional and Performance Requirements Specification for the EOSDIS Core System (ECS)

420-05-03   Goddard Space Flight Center, Earth Observing System (EOS) Performance Assurance Requirements for the EOSDIS Core System (ECS)

2.2 Applicable Documents

The following documents are referenced within this plan, or are directly applicable, or contain policies or other directive matters that are binding upon the content of this volume:

500-TIP-2110   Goddard Space Flight Center, Mission Operations and Data Systems Directorate (MO&DSD) Technical Information Program Specifications for Document Formats

2.3 Information Documents

The following documents amplify or clarify the information presented in this document. These documents are not binding on the content of this plan.

194-207-SE1-001   System Design Specification for the ECS Project

101-303-DV1-001   Individual Facility Requirements for the ECS Project

302-CD-001-003   Release A Facilities Plan for the ECS Project (Sep (95)

194-501-PA1-001   Performance Assurance Implementation Plan (PAIP) for the ECS Project

604-CD-001-004   Operations Concept for the ECS Project: Vol 1

604-CD-002-001   Release B Operations Concept Document for the ECS project: Vol 2

604-CD-003-001   ECS Operations Concept for the ECS Project: Part 2A -- ECS Release A

607-CD-001-001   ECS M&O Position Descriptions

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3. Facility Requirements

3.1 Location

ECS equipment will be installed in the following location to support the GSFC DAAC, EOC, SMC, and SEO operations:

Goddard Space Flight Center (GSFC)
Building 32
Greenbelt, MD 20771

This facility will be shared with other NASA organizations at Goddard.

3.2 Key Release Implementation Dates

This document updates the Release A Facilities Plan published in September '95 with the current Release A installation schedule and the facility diagrams identifying where Release A equipment will be located. Table 3.2-1, "Key Release Implementation Dates," identifies the key dates associated with the installation of ECS systems at GSFC and are based on the ECS release implementation schedule as of the preparation of this plan. These dates are determined through backward planning, which starts with the Integration and Test date for Release B. Time is allocated for acceptance testing; segment and system integration and testing; installation of the hardware, software, and local area network (LAN); and for pre-installation survey and staging of the equipment. The time required to install the equipment at site is dependent upon the quantity and complexity of the hardware and software planned. ECS sites will be installed sequentially. Therefore, the LAN and equipment installation date may change if the ESDIS Project Office changes the sequencing of ECS sites to be installed. Such changes will be announced in the site's Installation Plan.

Table 3.2-1. Key Release Implementation Dates

Release	Installation Plan Delivery	Facility Inspection	LAN/Equip Installation	External Comm Links	Integ & Test
A	5/96	6/96	7/96	7/96	9/96
B	9/96	10/96	11/96	11/96	4/97

An installation plan will be delivered 2 months prior to the scheduled installation date. That plan will contain DAAC-approved diagrams showing the planned placement of ECS equipment in the facility. This installation plan will reflect the results of joint planning by the ECS contractor and the DAAC's staff.

A slip in this schedule up to one week prior to the scheduled installation date would be considered a major delay because of the impact it would have on down-stream activity, resource schedules, costs, and ECS operations dates. A minor slip would be any slip in the inspection or installation dates that still allows the site installation to be completed on schedule.

The ECS Contractor assumes that the Government will have completed installation of the power distribution, cooling and air-conditioning units, and cable trays needed to support Release B systems prior to the facility inspection date shown above. A facility inspection is conducted to verify that facility preparations have been completed and that there are no issues that would impair the installation of ECS systems on schedule. Unresolved discrepancies between DAAC plans and ECS requirements will be forwarded to the ESDIS Project Office.

Some Government facility preparations require long lead times to complete. The site should begin its budgeting, contracting, and procurement actions sufficiently in advance to ensure completion by the dates required for installation. Generally, long lead items include the following:

- Site construction -- Varies dependent upon time required to budget, contract, construct, and clean up

- Procurement -- Purchase of PDUs, communications circuits, furniture, cooling systems, phones lines varies by site dependent upon local procedures and manufacturer/vendor lead time requirements

Government-furnished external communication links must be available for testing prior to start of ECS release integration and testing.

Government-furnished plans, procedures, and handbooks relevant to the operation and support of the DAAC are also required. These administrative documents include the policies, procedures, standards, and regulations the contractor must comply with while a tenant of the host facility. Other administrative information such as organization charts, telephone books, bulletins, and administrative notices are also needed to operate effectively at the local site. These documents will be obtained from local sites during site pre-installation surveys.

3.3 Power

The electrical power loads for ECS equipment at GSFC are listed in Table 3.3-1, "GSFC Equipment Power Requirements." Power required is 208/120 volts. This power should be conditioned to protect the equipment from surges and spikes. Specific details (i.e. volts, phases, amps, receptacles) of the power requirements for each equipment item will be furnished in the site's Installation Plan for Release B.

Table 3.3-1. GSFC Equipment Power Requirements (KVA)

	Release A	Release B	Releases C&D	Total KVA at Completion
Grnd Floor	30	60	76	76
1st. Floor	48	195	268	268
2nd. Floor	30	89	89	89

3.3.1 Uninterruptible Power Supply (UPS) Systems

UPS systems are recommended to support operation of critical equipment for 20 minutes after power failure. This would allow for controlled shutdown and the backup of critical data. UPS systems would accomplish the following:

- Condition power to negate surges, spikes, and other power fluctuations that may adversely affect computer hardware operation and data quality.

- Provide power during outages of short duration to allow time for controlled shutdown and switch over to auxiliary backup power, if available.

- Enable systems to remain operational during electrical storms or when commercial power is unstable

3.3.2 Auxiliary Power

The EOS Operations Center (EOC) on the second floor requires a Government-furnished backup/auxiliary power system. This auxiliary power system is required prior to the commencement of EOC operations.

If the GSFC DAAC historically experiences losses of power for more than 15-minutes per occurrence it should consider furnishing an auxiliary source of power for air conditioning units supporting data archive areas. Fluctuations in temperature and humidity are the major causes of media breakdown. Because the ECS media will be used for many years, precautions should be taken to ensure reliability of the data and to prolong the useful life of the media. Manufacturers recommend the following environmental conditions for optimum reliability and operating life of their tape media:

Table 3.3.2-1Recommended Tape Media Conditions

	Storage	Operating
Temperature	$68° \pm 9°$ F	$41°$ to $113°$ F
Relative Humidity	$50\% \pm 20$ %	20% to 80 %

If tape media are exposed to operating temperature changes greater than 30 degrees Fahrenheit, conditioning of the tapes will be required. This conditioning requires rewinding the tape end-to-end, which would be time-consuming and costly for a large library. As the temperature and humidity rise due to the loss of air conditioning, degradation of the media starts, shortening its useful life. The required humidity and temperature conditions can be maintained with an auxiliary power system to support the air conditioning systems during power loss. The DAAC should evaluate its risk of power loss to determine if an auxiliary power source is needed.

3.3.3 Equipment Grounding

A single point grounding system per the "Federal Information Processing Standards Publication 94" must be installed. The requirements are:

- Floor substructure must be attached to building ground or to ground rods driven through the slab to the appropriate depth. In some cases, the floor substructure may be attached to the building steel to provide grounding.

- The flooring must also meet the certain insulation resistance specifications. Specifically, the insulation resistance between the floor surface and earth ground must be 10^5 to 10^8 Ohms to prevent system failure or electrical shock. Sufficient resistance is achievable by using anti-static, non conductive floor tile with a resistance of 10^6 to 10^9 Ohms and by providing an appropriate connection to the metal portion of the ground plate.

- Power Distribution Units (PDUs) and other electrical equipment must have a grounding strap attached to the floor substructure to dissipate electrostatic buildup.

3.4 Heating, Ventilation, and Air Conditioning

Based on the class of processors currently planned for Release B, chilled water lines will not be required to cool these systems. Conditioned air should be supplied under the floor with the raised computer room floor acting as the plenum. The conditioned air should be at positive pressure. Equipment and console cooling should be supplied directly from this plenum or from louvered vents built into the raised floor panels. Ambient room temperatures in the range of $72° \pm 2°$ Fahrenheit and relative humidity in the range of $50\% \pm 5\%$ non condensing, are required to be maintained within the facility. Equipment cooling requirements for the facility are shown in Table 3.4.1. These requirements are based solely upon equipment and do not include the heating or cooling required for personnel, GFE, and physical space.

Table 3.4-1. GSFC Cooling Requirements (KBTU/Hr)

	Release A	Release B	Release C&D	Total BTU's at Completion
Grnd Floor	97	190	235	235
1st. Floor	160	654	900	900
2nd. Floor	100	200	300	300

3.5 Raised-Floor Space

Table 3.5-1 provides the raised-floor space requirement for GSFC. Required raised-floor space was computed using the equipment footprint plus clearances of 36" (front and back) and 18" (each side) for maintenance access. An additional 15 percent for aisle space was calculated into the total raised-floor area. Raised-floor space requirements do not include office, common use areas, control room, spare parts or maintenance (technical) rooms, etc.

Computer room raised-floor must meet the following criteria:

- Substructure/bolt-on stringers must be durable, secure, and maintain good electrical continuity.

- Floor panels must be capable of supporting a concentrated point load of 1,000 pounds and a uniform live load of 250 pounds per square foot.

- Floor air flow panels must be perforated and allow for distribution of air from the down-flow air conditioners. Panels should be supplied in the approximate ratio of 12-to-15 per 20-ton air conditioning unit.

Table 3.5-1. GSFC Raised Floor Space Requirements

	Release A	Release B	Releases C&D	Total Space at Completion
Grnd Fl.	891	2187	2872	2872
1st. Fl.	847	1718	2545	2545
2nd. Fl.	803	1413	1413	1413

3.6 Office Space

Table 3.6-1 identifies the GSFC DAAC office space requirements for contractor personnel for Release A and B. The office and common area staffing numbers are based on the ECS Contractor's "CO2.V3" staffing projections, which were distributed to ESDIS M&O and to the DAAC Managers in late Jan '96. These "CO2.V3" projections are based on the CO2 mission baseline. They therefore assume ECS Contractor operations personnel at all DAACs except ORNL. They do not assume transition of operations to another DAAC contractor, nor do they assume non-ECS staffing of the Data Specialist and User Services positions. The ECS Maintenance and Operations Manual, CDRL 607, provides the description of roles and responsibilities of ECS M&O personnel to assist the DAAC in identifying where to position ECS personnel (i.e. offices/ cubicles). The DAAC's network security and operations concepts must likewise be considered. The positioning of ECS personnel should be jointly determined between the ECS contractor and the DAAC Manager prior to CSR. In addition to the projections shown, each DAAC should figure on an additional 2 to 4 ECS contractor personnel to support the data migration efforts. As these projections are firmed up, the DAAC will be notified of the final space requirements for staffing.

In accordance with the current ECS baseline, staffing projections assume both LIS and DAO operations are at GSFC.

Table 3.6-1. GSFC DAAC Office Requirements

	Release A	Release B	Allocated to Date
Office Sq. Ft.	1866	2670	
M@150 sq. ft/pers.	1	1	1
S@100sq.ft./pers.	5	6	6
T@64sq.ft./pers.	19	30*	24

Note: M = Managers offices; S = Supervisor and Senior Technical offices; and T = Technical, Clerical and Secretarial modular offices. Office square foot requirements do not include aisles, hallways, etc. Experience shows that usable office space is generally no more than 2/3 of total available floor space. Therefore, recommend multiplying office square foot requirement by a factor of 1.5 to get total required square foot requirement.
* Cubicle requirements exceed those allocated by GSFC by 6 at Release B

Tables 3.6-2 and 3.6.3 identify the ECS contractor staffing projections and support office space requirements for the SMC/SEO and FOT for Releases A and B.

Table 3.6-2. SMC/SEO Office Requirements

	Release A	Release B	Allocated to Date
Office Sq. Ft.	4470	6726	6086
M@150sq.ft./pers.	0/5	0/5	5
S@100sq.ft./pers.	3/15	3/19	22
T@64sq.ft./pers.	1/29	7/52*	49

Note: M = Managers offices; S = Supervisor and Senior Technical offices; and T = Technical, Clerical and Secretarial modular offices.

* Exceeds allocated work spaces by 10 at AM-1 launch

Table 3.6-3. FOT Office Requirements*

	Release A	Release B	Allocated to Date
GSFC (Sq. Ft.)	1134	1682	1746
M@150sq.ft./pers.	1	1	1
O@100sq.ft./pers.	6	7	7
T@64sq.ft./pers.	6	13	14

* Excludes FOT sustaining engineering personnel requirements, which exceed personnel space allocations by 25 at Release B.

3.6.1 Maintenance and Operations Space

Table 3.6.1-1 depicts the current ECS Contractor M&O personnel maximum staffing projections for common areas for Releases A and B.

Table 3.6.1-1. Common Area Staffing Projections

Site	Release A	Release B
Ops Control Room (1st Fl, *)	13	19
Ops Control Room (2nd Fl, FOS)	3	4
Maintenance Room (Grnd. Fl)	1	2
Maintenance Room (1st Fl)	2	2
Maintenance Room (2nd Fl)	1	1
Data Ingest and Archive Room	1	3

 Notes: Depicts the maximum number of personnel in common area during shift operations (normally "day" shift.)

 *GSFC 1st Fl Ops Control Rm includes both SMC and GDAAC Ops positions. M&O Ops Concept includes the QA/Production Monitors within the Ops Control Room. No office space has been allocated for these functions.

3.6.2 Dedicated Functional Areas

3.6.3 Computer Room

This area contains the hardware supporting the information management and product generation functions (file servers, computers, supercomputers, and RAID storage.)

3.6.4 Data Ingest and Distribution Area

This area houses both the ingest and distribution hardware and the personnel who operate them, including the Ingest Manager and the Data Distribution Technicians.

3.6.5 Robotics Tape Archive Area

This area contains the robotics tape archive equipment. It must be kept under stringent environmental conditions to ensure the longevity of the archived data. Once loaded and operational, it is expected to be an unmanned, low traffic area.

3.6.6 Climate Controlled Tape Storage Area

This is an area in which new tapes are stored and acclimated prior to loading into the robotics equipment. It must be maintained under the same environmental conditions as the robotics tape archival room to ensure the longevity of the tapes. Therefore, it should be located adjacent to the robotics tape archival room, with access from that room.

3.6.7 Control Room

This is the DAAC operations center. It is the work area for the majority of the operations staff, including the Resource Monitor, the QA/Production Monitor, the Data Specialists and the Archive Manager.

3.6.8 Technical Room

This is an area in which maintenance technicians run diagnostics and repair equipment.

3.6.9 Spare Parts Area

This is an area under the control of the logistics and maintenance personnel in which the spare parts are stored. It should be controlled access to authorized personnel only.

3.7 Temporary Space

A total of three additional 64 sq. ft. cubicles (not included in the Office Requirements table) will be required to support the ECS teams during equipment installation, integration, and testing. In addition, a small meeting room should be available to the team throughout their stay to provide both work space and open storage overnight).

It is anticipated that "Tiger Teams" may be formed if required during Release B operations to work critical problems. Such teams may include local DAAC/ECS personnel, off-site vendor, and SEO

and EDF personnel. A dedicated conference/meeting room during the initial high activity period and the three additional cubicles identified above should suffice to satisfy these needs.

3.8 Conference Room Requirements

A total of three conference rooms have been designated within the ECS allocated work space at GSFC to support the ECS M&O organization.

3.9 Library Requirements

Space for one library has been negotiated within the ECS allocated work space at GSFC.

3.10 Training

3.10.1   Training Facilities

The ECS Training Program requires availability of classrooms either at the DAACs or in the vicinity of the DAACs for the training of M&O personnel. Classroom spaces should be chosen to meet the following requirements:

- Adequate lighting for students (50 lumens per square foot at eye level recommended)

- Table space for each student to be able to use charts of at least 11"X17" in size

- Space per student necessary to provide a comfortable learning environment and to comply with local, state, and federal fire and safety regulations

- Standard classroom equipment (i.e., overhead projector, white board, etc.) provided from DAAC training resource pool or other local source

3.10.2   Training Schedule

The need for training facilities at the DAAC will be sporadic from Release A CSR to the time of TRMM launch. From Release B CSR to AM-1 launch, however, the requirements for classroom training facilities will be more frequent and extensive. ECS Release B training schedules will be contained in the Release B ECS Training Plan (CDRL 622).

3.10.3   Training Equipment

Hands-on technical training will occur on equipment that exists in the operational environment, since a separate pool of equipment for training does not exist. It is not expected that operations equipment will be moved to conduct such training. The use of operations equipment should be scheduled to limit impact on operations commitments. For Release B, the use of equipment for training will have to be coordinated with needs for the same equipment for operations. Hands-on training for subsequent releases will require similar coordination.

3.11 Fax, Copiers, and Related Supplies

It is assumed that the DAAC/host site will provide the necessary facsimile and reproduction resources (equipment, toner, paper, office supplies) to support both the ECS members of the staff and the ECS library requirements.

3.12 Building Requirements

3.12.1   Building Security

As recommended, GSFC is providing 24-hour, seven-day-a-week controlled access to the ECS facility. A card key security system has been installed for access to the computer room, operations control room, data storage, archive and data ingest distribution areas.

3.12.2   Emergency Lighting

Emergency lighting is required to illuminate all areas to enable personnel to respond appropriately when utility power has been interrupted. Lighting should be sufficient to allow personnel to shut down the computer equipment.

3.12.3   Fire Protection

ECS equipment requires standard fire protection required for NASA computer facilities, defined by NHB 1700.1, V9, or the latest Federal fire protection standard in effect. The ECS design is compliant with fire protection requirements for office, computer room, and media archive areas. Fire protection must be in place to coincide with the site access times of the ECS contractor.

3.12.4   Environmental Monitoring

Central environmental monitoring of the computer facility is recommended to provide early warning of humidity or temperature problems that could affect computer hardware operations. This is especially applicable in the robotics tape archive areas, where constant humidity, temperature, and dust control is required to extend the useful life of the storage media.

The monitoring system should act as a central control point and provide monitoring capability of all mechanical and electrical components of the facility. These monitoring systems should be connected to the environmental systems, such as smoke and fire detection and suppression, power systems, and CPU alarms. Water detection and security systems should also be tied into these monitoring and control systems.

Regardless of the type of detection system used, sensors should be placed to detect leaks from the most likely sources, such as air conditioners, chillers, manifolds, cooled water pipes and floor drains. Because of the large amount of cabling and electrical conductors under the raised floor, all leaks must be detected quickly, and the locations of the activated sensor should show on a centrally located control panel.

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4. Host Organization Plans

4.1 Facility Availability

The GSFC DAAC is co-located with the ESDIS Project Office in the EOSDIS facility, B-32, on the GSFC East Campus. The DAAC has moved their V0 systems into the first floor of B-32. Construction of the EOC, SMC, and DAAC operations center is expected to be completed by August '96. Additional power distribution units to support Release B systems have yet to be sized and procured. Currently there are no known facility preparation issues that would prevent the installation of Release B systems on schedule.

4.2 Space Allocations

ESDIS has allocated resources (i.e. offices/cubicles and raised floor space) to accommodate the GSFC DAAC projected V0 and ECS requirements. The DAAC's V0 raised floor space is separate from (no physical wall separation) but adjacent to the ECS space. As the V0 HW is phased out and the ECS installation evolves, the demarcation between the two areas will become transparent. Working together, they have made the most effective use of the allocated office resources to meet the DAAC's short term requirements while accounting for the DAAC and Project support requirements ECS has downstream. Similarly, they have cooperated to provide the V0 data distribution operation with the temporary work area currently being used.

4.3 Resolution of Requirement Discrepancies

ESDIS controls and allocates the GSFC DAAC (V0 and ECS) and ECS ESDIS Project resources. To date the ECS offices/cubicle allocated to support the DAAC and the SMC/SEO fall 6 and 10 cubicles short, respectively, of projected requirements for AM 1 launch. This was previously noted in Tables 3.6-1 and 3.6-2.

4.4 LAN Connectivity

ECS will have established a FDDI backbone LAN in Bldg. 32 for Release A. It is currently planned that some ECS operations support personnel will be in offices using the building infrastructure LAN to access the ECS systems on the computer floor. This could present security risks to ECS systems and performance problems to the infrastructure LAN. Extension of the ECS LAN to these offices using the class 5 cable already installed in building 32 is a possible solution. This issue is currently being addressed by the Release A development organization and should be resolved by the time Release B installations begin. The Ir-1 equipment will have been transitioned onto the ECS FDDI backbone.

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5. Facility Diagrams

5.1 GSFC Facility Diagrams

Facility diagrams showing the proposed placement of ECS equipment and use of the GSFC facility at Release B are provided in Figures 5-1 through 5-3. These diagrams will be jointly worked between the ECS and GSFC facility planning staffs between Release B CDR and the submission of the site Installation Plan 2 months prior to the scheduled installation. The site installation plan will reflect the jointly agreed upon placement of ECS equipment and use of the facility.

5.1.1 Equipment Layouts

ECS equipment is identified on the floor plans with an identification code. This code can be matched with the information in Table 5.1.1-1 to determine the type of equipment shown.

Table 5.1.1-1. Equipment ID Codes

Item No.	Product	Model	Vendor
2	3480 Drv w/ACL	T480DA	ARCHIVE
3	3490 Tbl Top Tp Drv	E01	IBM
4	3590 Tape Drive		TBD
5	4mm Tp Dr w/4 Drvs & Stkr.	Spectra 4000/20	ECCS
7	Tape Stacker (8mm)	EXB-210TW/8505S	EXABYTE
9	EMASS ARCHIVE TAPE LIBRARY	AML/2-Tall	EMASS
10	Linear Mag Drv	NTP	IBM
11	EMASS ARCHIVE TAPE LIBRARY	AML/E	EMASS
12	STK ARCHIVE TAPE LIBRARY	Powderhorn	Stor. Tech.
13	FDDI TO ENET LAN Bridge	DEFEB-AC	CISCO
17	DIGITAL LASER TAPE STACKER		TBD
19	EXTERNAL 10GB DISK DRIVE		SUN
22	FACSIMILE		TBD
23	FDDI CONCENTRATOR	2914-04	BAY NETWORKS
24	ALANTEC POWER HUB 7000	7310-00	ALANTEC
25	ROUTER W/AGS+/CCTL/APP-LM2	AGS+	CISCO
26	HIPPI SWITCH 8x8		TBD
27	ETHERNET HUB	MICROMAC-22E	CABLETRON
28	LAN ANALYZER		TBD
29	LASER PRINTER 12ppm	HP LASERJET 4M+	HP
30	Color Printer-Laserjet	COLOR LASERJET	HP
31	IMPACT PRINTER	3,480	GENICOM
32	LINE PRINTER	4490XT	GENICOM
33	COMM RACK 24"W/30"D/72"H	COMM RACK	TBD
35	RAID w/1-40GB (W/2.1DR)	HP 9000 MOD 10	HP
36	RAID w/41-80 GB (W/4.3DR)	HP 9000 MOD 20	HP
37	RAID w/81-160GB (W/4.3DR)	HP 9000 MOD	HP
38	RAID w/1-40 GB	CHAL RAID (2.1DR)	SGI
40	RAID w/81-160GB	CHAL RAID (4.3DR)	SGI
41	RAID w/161-240GB	CHALRAID (4.3 DR)	SGI
42	RAID w/1-60 GB (2.1DR)	SPARCSTOR 100	SUN
44	RAID w/121-240GB (4.3DR)	SPARCSTOR 200 (2EA)	SUN
45	COPIER	NP-30-50	CANNON
47	SCANNER		HP
50	SCI PROCESSOR W/1-8 CPUS	PC XL 1-8 CPUs	SGI
53	SERVER CONSOLE		SGI
55	DATA/REAL/FILE SRV IN SRV RACK	DEC ALPHA 1000 4/233	DEC
56	SERVER RACK	RACK FOR DEC ALPHAS	DEC
57	DOCUMENT SRV SUN 20/712	SUN SPARC 20/712	SUN

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Table 5.1.1-1. Equipment ID Codes (cont'd)

Item No.	Product	Model	Vendor
58	SRV HP 9000 J SERIES	HP 9000 J SERIES	HP
59	SRV HP 9000 K SERIES	HP 9000 K SERIES	HP
60	SERVER	INDIGO2	SGI
61	SRV SGI CHALLENGE DM	CHALLENGE DM	SGI
62	SGI CHALLENGE L PROCESSOR	CHALLENGE L	SGI
63	SRV SGI CHALLENGE XL	CHALLENGE XL	SGI
65	BB SERVER	SUN SPARC 20/50	SUN
66	PLNG SERVER	SUN SPARC 20/71	SUN
67	DOCUMENT SERVER	SUN SPARC 20/712	SUN
69	TYMESERV 1000 IRIG CAB NASA 36	TYMESERV 1000	DATUM
70	SERVER/WORKSTATION	ULTRA 140 OR 170	SUN
71	SYNC TYME CODE GENERATOR	9,790	DATUM
73	WS: 64MB, 2GB, CDROM	HP 715/64	HP
75	WS: 64MB, 2GB, CDROM	SPARC 20/50	SUN
76	WORKSTATION	ULTRA	SUN
105	QUEING SERVER SUN 20/71	SUN SPARC 20/71	SUN

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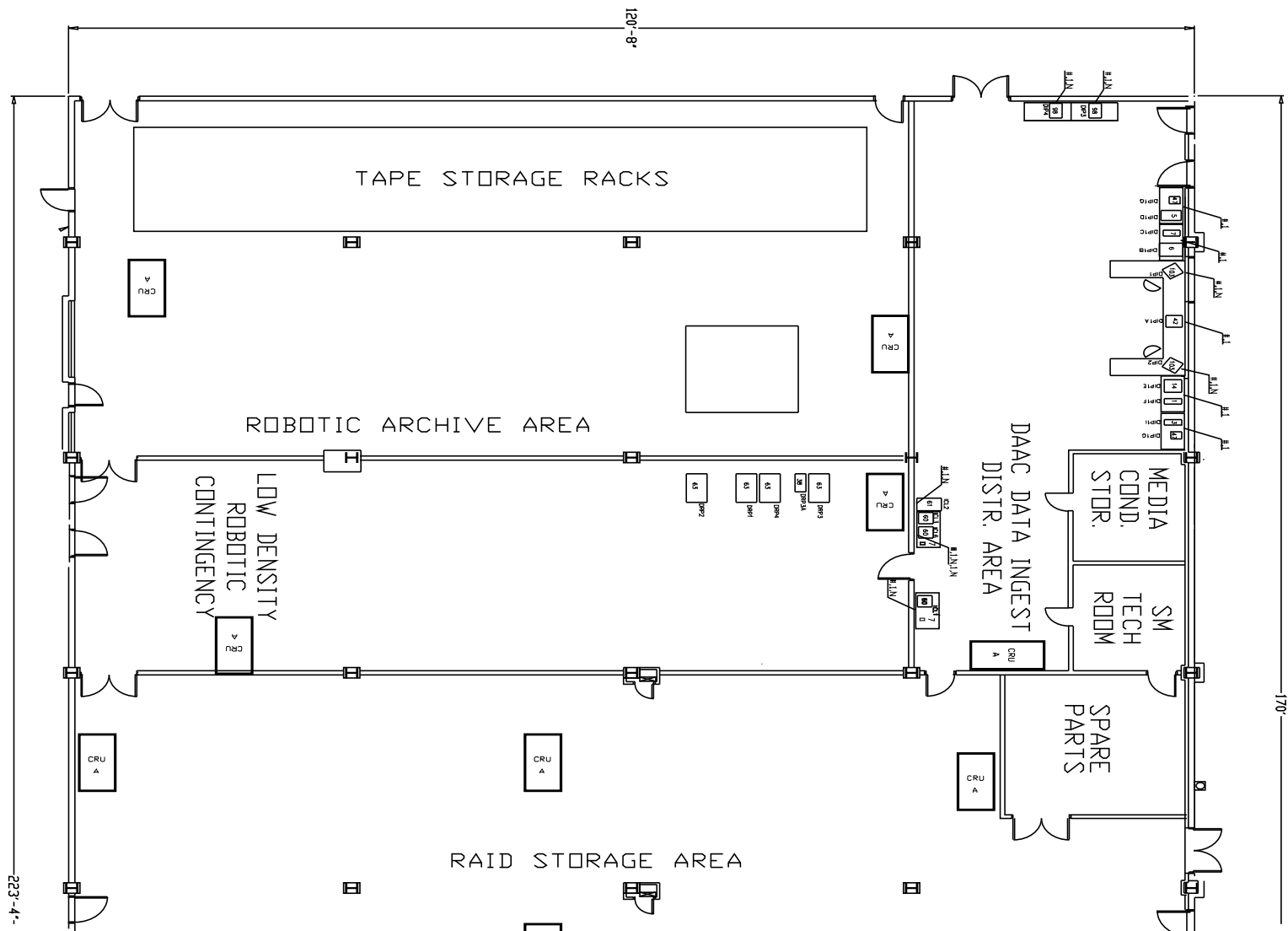
Figure 5.1-1. GSFC Ground Floor

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GSFC 1ST FLOOR PLAN REALEASE A
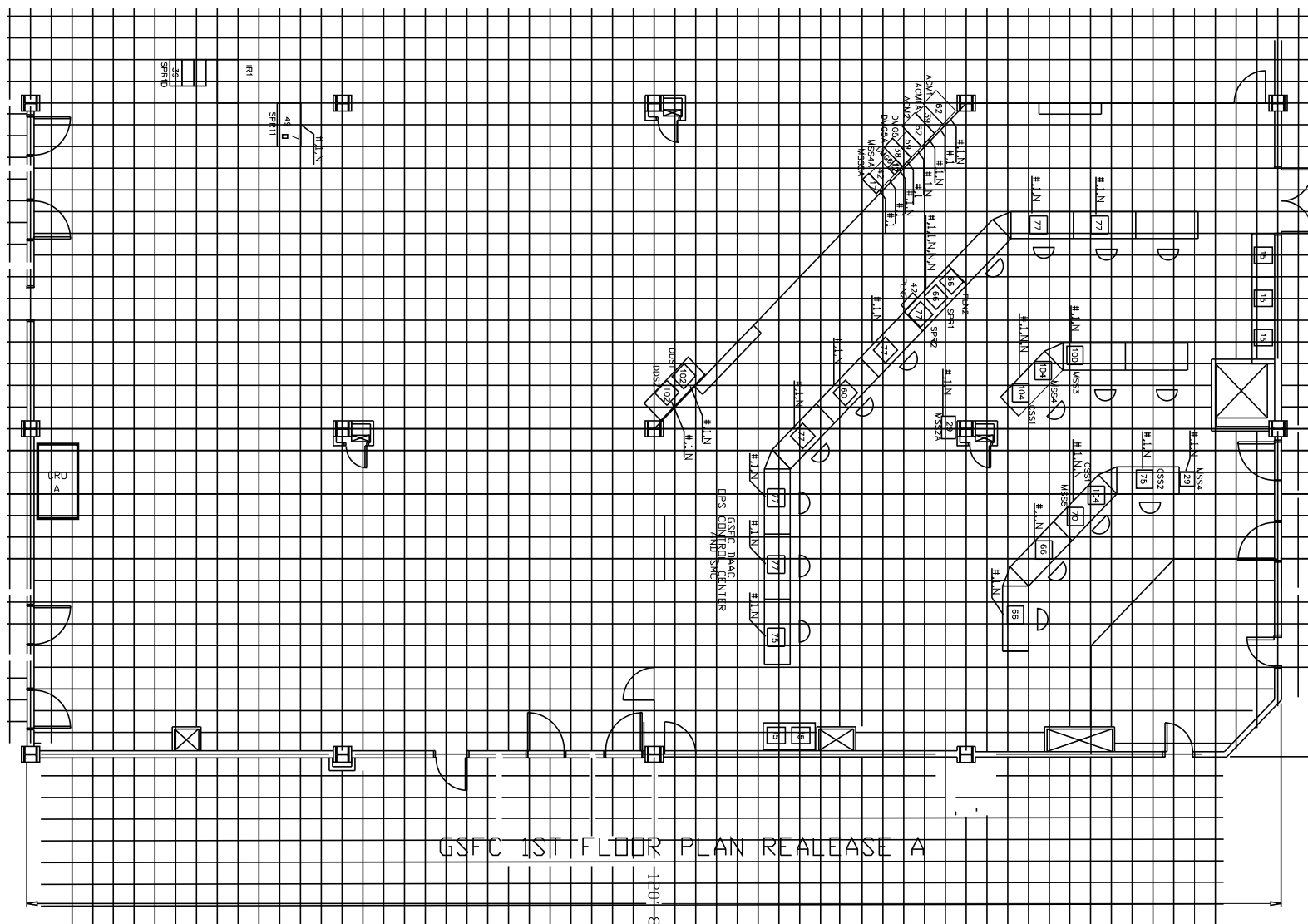
Figure 5.1-2. GSFC 1st Floor

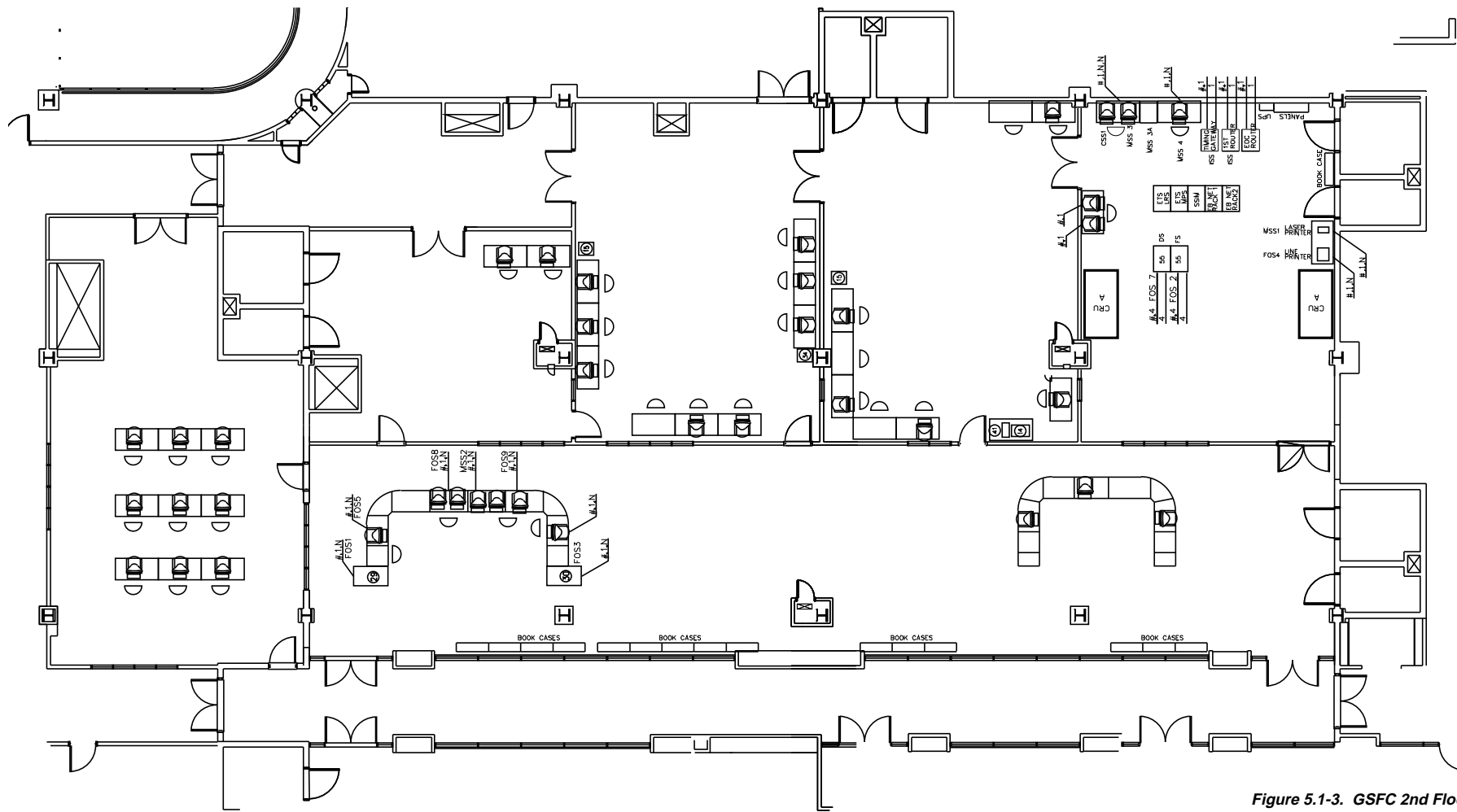5-7/5-8 (blank)

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Figure 5.1-3. GSFC 2nd Floor

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Abbreviations and Acronyms

ASF   Alaska SAR Facility

BODs   Beneficial Occupancy Dates

BTU   British Thermal Unit

CRUs   Computer Room Units

CPU   Central Processing Unit

CSMS   Communications and Systems Management Segment

DADS   Data Archive and Distribution System

DAAC   Distributed Active Archive Center

DCN   Document Change Notice

DID   Data Item Description

ECL   External Communications Links

ECS   EOSDIS Core System

EDC   EROS Data Center

EOC   EOS Operations Center (ECS)

EOS   Earth Observing System

ESN   EOSDIS Science Network (ECS)

FIPS   Federal Information Processing Standards

FOS   Flight Operations Segment

GSFC   Goddard Space Flight Center

I&T   Integration and Testing

JPL   Jet Propulsion Laboratory

LAN   Local Area Network

LaRC   Langley Research Center

M&O   Maintenance and Operations

MSFC   Marshall Space Flight Center

NSIDC   National Snow and Ice Data Center

ORNL   Oak Ridge National Laboratory

QA   Quality Assurance

RMA	Reliability, Maintainability, and Availability
RRR	Release Readiness Review
SCF	Science Computing Facility
SDPS	Science Data Processing Segment
SOW	Statement of Work
SEO	Sustaining Engineering Organization
TBD	To Be Determined
TRMM	Tropical Rainfall Measuring Mission (joint US-Japan)
UPS	Uninterruptible power supply
WAN	Wide Area Network